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13. ABSTRACT *(Maximum 200 words)*

DURING THE SECOND YEAR OF THIS THREE YEAR PROJECT, WE HAVE WORKED ON THREE PUBLICATIONS (SEE ATTACHMENT), SPONSORED THE VISITS OF TWO FORMER SOVIET UNION SCIENTISTS TO THE USA AND DISCUSSED DATA RESCUE WITH THEM, AND WE HAVE MADE PROGRESS ON IDENTIFYING IN SITU NITRATE SENSORS. (SEE ATTACHMENT)

14. SUBJECT TERMS
ARCTIC NUCLEAR WASTE ASSESSMENT, ANWAP, RADIONUCLIDES, DUMPING, ARCTIC OCEAN, KARA SEA, NORTH PACIFIC, ALASKA, NITRATE, CHEMICAL OCEANOGRAPHY.

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Progress Report: 1 July 1995-30 June 1996
Consolidating and Advancing Knowledge of the Chemical Oceanography of the Arctic Ocean
ONR Grant No.: N00014-94-0682
Old Dominion Project Nos. 243361&243362

This project has the following major objectives:
1) Facilitating the consolidation and dissemination of the scientific results of the Arctic Nuclear Waste Assessment Program (ANWAP).
2) Helping to ensure that chemical oceanographic data from the Arctic Ocean that was collected by the Former Soviet Union (FSU) does not disappear with the collapse of some of the scientific infrastructure in the FSU.
3) Introducing new instrumentation for autonomously collecting chemical oceanographic data from the Arctic Ocean and its adjacent seas.

During the second year of this three year project, effort devoted towards objective 1 has included:
1) Finalizing a manuscript for the *Oceanographic Society Magazine* that describes the ANWAP program and its initial results (Edson, *et al.* in press.)
2) Attending the ANWAP investigators' workshop that was held this spring at Snowbird, Utah.
3) Beginning to organize a volume of *Marine Chemistry* that will be devoted to ANWAP results.

Progress under objective two has included sponsoring the visits of two FSU colleagues to the United States and holding initial discussions on the joint analysis of data from the FSU Arctic. One of these visitors was Dr. Igor Melnikov of the P.P. Shirshov Institute in Moscow. The other was Dr. Anatoliy F. Mandych of the Institute of Geography. We hope to initiate joint data analysis and rescue projects with both investigators within the next few months in collaboration with Dr. Peter Becker of the Battelle Marine Laboratory.

Efforts under objective 3 are planned to peak during the last year of this three year program of research, but we have established an initial collaboration with Dr. T. Whitledge of the University of the Texas, to purchase a commercial *in situ* nutrient sensor. Three models are under consideration, two of which are based on wet chemical analyses. The third is based on the absorption of UV light and will not be commercially available until this fall. Because the UV based instrument has the most potential to be integrated with autonomous vehicles and does not require chemicals, we have opted to wait until fall before purchasing an instrument. In the meantime, we have contracted with Mr. Dean Lambourn of the University of Washington to construct an automated syringe sampler that will provide periodic reference samples needed for testing the *in situ* device that we will purchase within the next several months.

This award has also supported the completion of a manuscript dealing with

biogeochemical cycling in Arctic shelf sediments that has recently been submitted to *Continental Shelf Research* (Devol *et al.*, submitted) and publication of a comment in Nature (Codispoti, 1995).

References

Codispoti (1995) Is the ocean losing nitrate? *Nature:* 376: 724.

Devol, A.H., L.A. Codispoti and J. P. Christensen (submitted) Denitrification in arctic shelf sediments. *Continental Shelf Research.*

Edson, R., G.L. Johnson, L.A. Codispoti, T. Curtin and the ANWAP Science Team (1996) The Arctic Nuclear Waste Assessment Program. *Oceanography:* 9:1-7.